



Environmental Effects of Dredging Technical Notes



Evaluating Environmental Effects of Dredged Material Management Alternatives — A Technical Framework

Purpose

This Technical Note presents a brief description of a joint U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA) Technical Framework for the identification of environmentally acceptable alternatives for the management of dredged material. *This Technical Note replaces the earlier Technical Note EEDP-06-14, which should be discarded.*

Background

The USACE and USEPA have developed a consistent Technical Framework for their agencies' personnel to follow in identifying environmentally acceptable alternatives for the management of dredged material (USACE/USEPA 1992). The USACE had previously developed a Management Strategy (Francingues and others 1985) for evaluation of dredged material alternatives, which focused on contaminant testing and controls. USEPA later initiated development of a similar management strategy focusing on environmental considerations of disposal alternatives. A USACE/USEPA work group was subsequently formed for the purpose of developing the joint Technical Framework, which has been endorsed by both agencies.

The Technical Framework is intended to serve as a consistent "road map" for USACE and USEPA personnel in evaluating the environmental acceptability of dredged material management alternatives. Specifically, its major objectives are to provide:

- A general technical framework for evaluating the environmental acceptability of the full continuum of dredged material management

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alternatives (open-water placement, confined (diked) placement, and beneficial uses applications).

- Additional technical guidance to supplement present implementation and testing manuals for addressing the environmental acceptability of available management options for the discharge of dredged material in both open-water and confined sites.
- Enhanced consistency and coordination in USACE and USEPA decision-making in accordance with Federal environmental statutes regulating dredged material management.

Additional Information

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Introduction

Dredged material placement is regulated by the Marine Protection, Research, and Sanctuaries Act (MPRSA), also called the Ocean Dumping Act, and the Federal Water Pollution Control Act Amendments of 1972, also called the Clean Water Act (CWA). The requirements of the National Environmental Policy Act (NEPA) and its implementing regulations must also be considered in evaluating alternatives. The Technical Framework is designed to meet the procedural and substantive requirements of NEPA, CWA, and MPRSA in a technically consistent manner.

The Technical Framework described herein is intended to be applicable to all proposed actions involving the management of dredged material. This includes both the new work construction and navigation project maintenance programs of the USACE as well as proposed dredged material discharge actions regulated by the USACE. Further, the document addresses the broad range of dredged material, both clean and contaminated, and the broad array of management alternatives — confined (diked intertidal and upland) disposal, open-water (aquatic) disposal, and beneficial use applications.

Application of the Technical Framework will allow for consistency in decision-making across statutory boundaries and consideration of the full continuum of dredged material discharge options. For example, application of the Technical Framework will help ensure that open-water discharge does not hinder the development and use of other options, such as confined upland sites. The guidance established by the Technical Framework should reduce confusion by both regulators and the regulated community in all future evaluations.

Overview of Technical Framework

The Technical Framework for determining environmentally acceptable placement alternatives for dredged material can be applied nationwide and is relatively general, but comprehensive. It addresses a wide range of dredged material characteristics, dredging techniques, and management alternatives. Because the Technical Framework provides national guidance, flexibility is necessary. It should not be followed rigidly; rather, it should be used as a technical guide to evaluate the commonly important factors to be considered in managing dredged material in an environmentally acceptable manner. The Technical Framework is consistent with and incorporates the evaluations conducted under NEPA, CWA, and MPRSA and consists of the following broad steps:

- Evaluation of dredging project requirements.
- Identification of alternatives.
- Initial screening of alternatives.
- Detailed assessment of alternatives.
- Alternative selection.

Detailed Assessments

For both open-water and confined placement alternatives, the detailed assessment of alternatives includes the following broad steps:

- Determining the characteristics of disposal sites.
- Evaluating direct physical impacts and site capacity.
- Evaluating contaminant pathways of concern.
- Evaluating control measures.
- Retaining environmentally acceptable alternatives.

This technical note focuses in detail on the evaluation of contaminant pathways of concern.

Contaminant Pathways

Any contaminant testing should focus on those contaminant pathways where contaminants may be of environmental concern, and the testing should be tailored to the available disposal site. For aquatic sites, contaminant problems may be related to either the water column or benthic environment. For confined sites, potential contaminant problems may be either water quality related (return water effluent, surface runoff, groundwater leachate), contaminant uptake related (plant or animal), or air related (gaseous release).

Design of a testing program for the sediment to be dredged depends on the pathways of concern for the alternative being evaluated. Protocols have been developed to evaluate all contaminant pathways of concern and consider the

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unique nature of dredged material and the physicochemical conditions of each placement site under consideration.

The testing guidelines that have been developed jointly by the USEPA and USACE generally incorporate a tiered approach and a scientifically based decision process that uses only the level of testing necessary to provide the technical information needed to assess the potential chemical and biological effects of the proposed discharge of dredged material.

Management Actions or Control Measures

In cases where results of tests and assessments indicate that the MPRSA Impact Criteria or CWA Guidelines for a given pathway will not be met, management actions may be considered to meet the Criteria or Guidelines. Possible controls for open-water alternatives include operational modifications, use of submerged discharge, treatment, lateral confinement, and capping or contained aquatic disposal. Possible controls for confined placement include operational modifications, treatment, and various site controls (for example, covers or liners).

Retention of Environmentally Acceptable Alternatives

With the completion of detailed testing and assessments and the consideration of management and control measures for the respective alternatives, a determination of environmental acceptability is made. This determination must ensure that all applicable standards or criteria are met. If control measures are considered, a determination of the effectiveness of the control measure in meeting the standards or criteria must be made. If all standards or criteria are met, the alternative can be considered environmentally acceptable. At this point in the Technical Framework, socioeconomic, technical, and other applicable environmental considerations must be evaluated before selecting a management alternative.

References

- Francingues, N. R., Palermo, M. R., Peddicord, R. K., and Lee, C. R. 1985. "Management Strategy for the Disposal of Dredged Material: Contaminant Testing and Controls," Miscellaneous Paper EL-85-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- USACE/USEPA. 1992. "Evaluating Environmental Effects of Dredged Material Management Alternatives — A Technical Framework," EPA-842-B-92-008, U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, Washington, DC.

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